Introduction to simulink

- analyising

closedloop

it still open Loop untill we start to enhance it

at this time we say it is closedloop.

physical meaning of stability.

all system are stable

stability ⟹ it appear when there are outside parameter. effect on the system.

So we use stablity to protect the system. from affecting be this parameters.

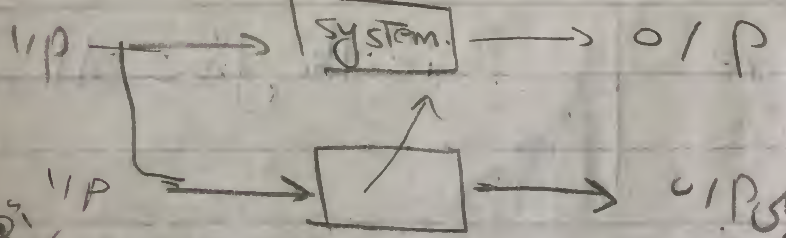
* energ is related to stability.

we need to reduce energy losses

system → physical Body. need to future predection.

↘ ① characteristic « model, observation »

estimator depending adaptor « adap it itself and tell us the needed information »



→ نظام آخر مماثل للأصلي "i/p"

1- adap (A, B, C, D) ∑ الـ o/p في "energy" حتى يتساوى

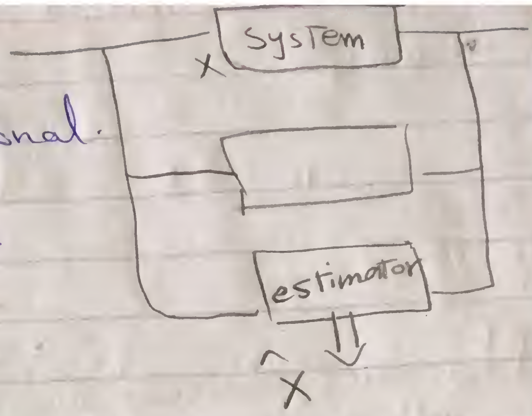
└→ direct transmision

2- estimator

" All variable "

A ⇒ . eign value of system ≅ poles.

In matrix can transfer into the diagonal matrix in this case.
the diagonal values is equal eignvalue.



ex $\dot{X} = AX$

$SIX(s) - X_0 = AX(s)$

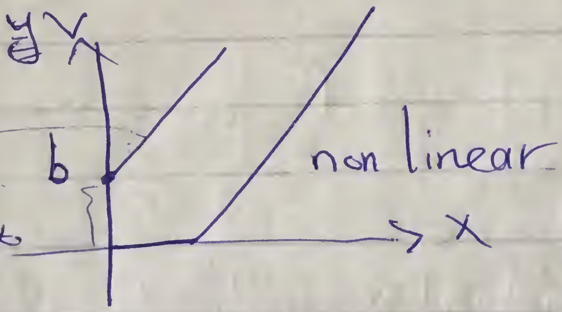
$(SI - A)X(s) = X_0$

Check linearty.

1 ohm — نشوف هل دي حققت قانونه
أي طالما زودت في الدخل يبقى لازم يكون الزيادة في الخرج
بنفس المقدار

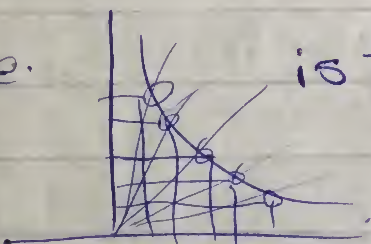
2- Super position.

$V = aX + b$ ←



* في حالة تعرض النظام إلى
multi i/p $\xrightarrow[\text{على}]{\text{des}}$ multi o/p

characteristic curve.



is the منحنى التشغيل

stability ← زادت
unstability ← قلت
energy. ومنه عامل الأهم طولها

. The main objective of any system is to obtain eign value.

gordan Form:
all the uper 1 أو 0
eign value diagonal → - stable.
[at least 1 (+) unstable.
[0 only stable u critical
[2 0's unstable.

$$\begin{pmatrix} \dot{x}_1 \\ \dot{x}_2 \end{pmatrix} = \begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \end{pmatrix}$$

$\dot{x}_1 = x_2 = Const.$
$x_2 = 0$ all the time ثابت

$\frac{dx_1}{dt} = x(t) \Longrightarrow \boxed{X = t}$
تكامل الصفرية

* إذا سبب مشاكل في المستقبل
بنشيل 1 من matrix.
وحيد

(1) eign value (2) eign vector — المشاكل eignvalue
independancy ⇒ دراسة عشان تقدر مراعاة في
النظام

system can be invertable if all parameters u eign val
non zero.

B "Controllable or not Controllable".

Controllable.

I/P أدخل ← تحصل على O/P نتيجه مقابله

is the ability of the i/p to change the state of variable from one point to another in a specific time.